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THE TAXONOMIC STATUS OF THE WHITE-TAILED KITE

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ABSTRACT.—The White-tailed Kite (*Elanus leucurus*) of the Americas has been merged with the Black-shouldered (or Black-winged) Kite (*E. caeruleus*) of the Old World and the Australian Black-shouldered Kite (*E. axillaris*) by North American authorities (but not elsewhere), primarily because of similarity in plumage. However, American kites differ from Old World kites in greater size and weight, in proportions (relatively longer tail and smaller bill and feet), plumage pattern (particularly of juveniles), and in behavior. Here we argue that these characters are sufficiently distinctive to warrant recognition of *E. leucurus* at the species level. *Received 19 May 1992, accepted 1 Sept. 1992.*

The White-tailed Kite (*Elanus leucurus*) of the Americas was long considered a species distinct from the Black-shouldered (or Black-winged) Kite (*E. caeruleus*) of the Old World, and the Australian Black-shouldered Kite (*E. axillaris*). We follow Schodde and Mason (1980) and McAllan and Bruce (1989) in the use of *axillaris* rather than *notatus* as the name for the Australian species. However, Parkes (1958) and Husain (1959) suggested that both *leucurus* and *axillaris* should be considered conspecific with *caeruleus,* and that the complex forms a superspecies with the Letter-winged Kite, *E. scriptus,* of Australia. Arguments for this merger were based primarily on the similarity of plumage. Parkes (1958) stated that, for any plumage character, forms of the combined species *E. caeruleus* could be arranged in a progressively intergrading series. Husain (1959) postulated a biogeographical scheme to account for the distribution of the forms, considering only the amount of black on the underwing.

The American Ornithologists' Union (AOU 1983), Palmer (1988), and American field guides based on AOU (1983) follow Parkes (1958) and Husain (1959) and treat the American forms under the combined name

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caeruleus. On the other hand, all authorities outside of and many from North America have continued to recognize *E. leucurus* and *E. axillaris* as species distinct from, but closely related to, *E. caeruleus* (Vaurie 1965, Brown and Amadon 1968, Mayr and Short 1970, Glutz von Blotzheim 1971, Condon 1975, Stresemann and Amadon 1979, Cramp and Simmons 1980, Brown et al. 1982, Amadon and Bull 1988, Short et al. 1990, and Sibley and Monroe 1990). The three taxa are often treated as allospecies.

Here we discuss differences in size, proportions, plumage, and behavior that lead us to the conclusion that *Elanus leucurus* of the Americas should be treated as a species distinct from *caeruleus* and its races. We believe that *axillaris* should similarly be considered distinct, although our study was directed less toward that form and we have no experience with it in the field. Mees (1982) suggested that several other recognized subspecies of *caeruleus* should be combined with *E. c. hypoleucus* and recognized at the same level as *caeruleus, leucurus,* and *axillaris*.

METHODS

The senior author has observed both *E. leucurus* and *E. caeruleus* in the field for many hours, *leucurus* in California, Texas, Mexico, Guatemala, and Panama, and *caeruleus* in Senegal, Kenya, Spain, and India. His notes on behavior and appearance are supplemented by information in the literature.

Plumage characters were examined on and measurements of wing chord, tail length, culmen from cere, and hallux length were taken from specimens in the American Museum of Natural History, the British Museum (Natural History), and the U.S. National Museum of Natural History. Additional sets of measurement data were obtained from the literature, as was information on weight.

RESULTS

White-tailed Kites (*E. leucurus*) differ from Black-shouldered Kites (*E. caeruleus*) in size and especially in proportions, in characteristics of the plumage, especially in young birds, and in hunting behavior and flight. Australian Black-shouldered Kites (*E. axillaris*) are similar to *caeruleus* in proportions but resemble one or the other of the Old and New World forms in plumage characters and behavior.

Size and proportions.—White-tailed Kites are considerably larger than Black-shouldered Kites (Table 1; Fig. 1), particularly in length of wing and tail. In all forms of the genus other than *E. scriptus* the sexes are similar in size and samples have been combined by many authors; females of *scriptus* are larger than males (Table 1; Brown and Amadon 1968). We attribute differences in means in samples of *leucurus* to differences in method of measurement, as several of the samples may have included the same individual specimens (Palmer 1988:135). As noted by Bangs

TABLE 1

MEASUREMENTS (MM) FROM POPULATIONS IN THE GENUS *ELANUS*

Wing			Tail			Culmen			
N sex[a]	Range	$\bar{x}$	N	Range	$\bar{x}$	N	Range	$\bar{x}$	Source[b]
E. l. majusculus, North America									
10	300–324	309	10	170–181	177	9	18.0–19.1	18.7	1
25	300–325	316	25	170–188	179	25	16.5–21.0	19.2	2
14	302–328	314	14	174–186	181	14	18–19	18.7	3
20 m		316				19		19.1	4
15 f		318				15		19.5	4
9 m		309	9		184	9		18.5	5
7 f		307	7		183	7		19.2	5
E. l. leucurus, South America									
10	288–304	295	10	157–169	162	10	16.6–17.9	17.4	1
14	290–310	301	14	149–177	162	14	16.5–19.5	17.7	2
E. c. caeruleus, Europe and Africa									
13 m	249–292	271	18	108–136	118	17	15.8–17.9	17.1	6
13 f	262–297	273	13	108–127	118	15	15.9–18.2	17.2	6
E. c. caeruleus, Africa									
7	248–272	260	7	116–127	120	7	15.2–17.0	16.2	1
E. c. vociferus, Southern Asia									
9	248–278	264	9	113–130	123	9	15.2–17.9	16.7	1
E. c. sumatranus, Sumatra									
11 m	290–303	294	12	132–146	137	12	17.8–19.0		7
13 f	285–305	294	13	130–146	138	13	18.5–20.3		7
E. c. hypoleucus, Java									
16 m	292–310	298	18	132–150	140	18	18.8–19.8		7
16 f	294–310	302	18	131–151	142	18	19.0–20.8		7
E. c. wahgiensis, New Guinea									
—		297							8
E. axillaris, Australia									
6	291–298	294	6	136–142	139				1
— m	280–302	294	—	142–153					8
— f	280–310	298	—	142–154					8
E. scriptus, Australia									
— m	292–296		—	146–150					8
— f	302–313		—	156–162					8

[a] Sexes combined unless indicated (m for male, f for female).

[b] Sources: 1, this study; 2, Bangs and Pennard (1920); 3, Friedmann (1950); 4, Snyder and Wiley (1976); 5, Havbecker (1942); 6, Cramp and Simmons (1980); 7, Mees (1982); 8, Brown and Amadon (1968).

FIG. 1. Two specimens of *E. caeruleus* (left) and two of *E. leucurus* (right) showing dorsal (above) and ventral (below) surfaces. Note differences in size, relative lengths of tails, and back color.

TABLE 2

WING/TAIL RATIOS OF SEVERAL POPULATIONS OF *ELANUS* (BASED ON DATA IN TABLE 1)

Species	Population	Range of ratio
Elanus leucurus	North America	1.70–1.80
E. leucurus	South America	1.75–1.86
E. caeruleus	Africa	2.05–2.28
E. caeruleus	Asia	2.05–2.28
E. "hypoleucus"	Sumatra, Java	2.14[a]
E. axillaris	Australia	2.06–2.14
E. scriptus	Australia	1.93–1.99

[a] From data in Mees (1982).

and Pennard (1920), North American White-tailed Kites, *E. l. majusculus,* are somewhat larger than South American birds, *E. l. leucurus.* The latter are nevertheless notably larger than Old World *caeruleus* and Australian *axillaris.* The populations constituting *hypoleucus* of Mees (1982) are close to the size of American birds in wing chord measurements but have much shorter tails (Table 1).

The difference in tail length between *leucurus* and *caeruleus* is greater than the difference in wing length (Table 1). This difference in proportions may be best appreciated from calculation of the wing/tail ratio. In all American birds, this ratio is less than 2.0; in Old World birds and in those of Australia it is invariably more than 2.0 (Table 2). The ratio is intermediate in *E. scriptus.* This proportional difference is particularly noticeable on perched birds of both forms. On perched *leucurus* the wing tips do not extend to the tail tip, whereas on perched *caeruleus* they project far beyond the tail tip (Frontispiece).

Lengths of the culmen (Table 1) and hallux (data not shown; sample means 15.7–16.5 mm) are similar throughout the complex and cannot be used to separate *leucurus* and *caeruleus.* However, as *caeruleus* is smaller, the bill and feet are proportionally larger; in particular, *caeruleus* appears larger headed than does *leucurus* (Frontispiece).

Mendelsohn and Jaksic (1989) summarized weight data, and showed that American *leucurus* averages 50–65 g heavier than African *caeruleus*; Australian *axillaris* is intermediate, but is nearer to South American *leucurus.*

Data summarized by Mendelsohn and Jaksic (1989) indicate that the length of the secondaries in Californian *E. l. majusculus* and African *E. caeruleus* is similar (158 vs 146 mm, respectively), but as *leucurus* is larger

and longer winged, the wing shapes of the two are different. This and the differences in relative tail length result in quite different shapes of flying White-tailed Kites and Black-shouldered Kites. According to Mendelsohn and Jaksic (1989), *leucurus* has both a higher aspect ratio and a much greater wing area than does *caeruleus* (1001 vs 843 cm^2).

Plumage.—*E. leucurus* and *E. axillaris* have a patch of black underwing coverts at the base of the primaries. This patch is lacking in *E. caeruleus,* although some individuals of that species have a few coverts with dusky tips (Husain 1959). The lower surface of the primaries is dark in *leucurus, axillaris,* and most *caeruleus.* The primaries are nearly white below, with a variable amount of gray on the wing tip, in *E. c. hypoleucus* and *E. c. sumatranus* (Salomonsen 1953), and apparently in *E. c. wahgiensis* (Mayr and Gilliard 1954).

The outer five pairs of rectrices of young *leucurus* are white, with a variable amount of pale gray on the distal portion of the outer webs. On all but the outer pair the gray extends onto the inner web forming a continuous subterminal tail band. The central rectrices are entirely gray except for a narrow white tip. The gray on the rectrices is darker and seldom, if ever, forms a band across the tip of the tail in young *caeruleus,* usually being restricted to the outer webs. In *E. c. hypoleucus* and in *E. axillaris,* the gray on the tail is much reduced and except for the central rectrices the tail is essentially white.

Behavior.—White-tailed Kites hunt almost exclusively by hovering; Jaksic et al. (1987) reported seeing only four instances of hunting from perches during observations of 80 hover-hunts in Chile. Australian *axillaris,* like *leucurus,* hunts mostly by hovering (R. Schodde, pers. comm.). After reviewing the literature, Mendelsohn and Jaksic (1989) could report no observations of perch-hunting from North America. On the other hand, Old World Black-shouldered Kites hunt regularly from perches (Mendelsohn and Jaksic 1989), hunting from the hover only about 30% of the time (Tarboton 1978), although the proportional number of hunting events (as opposed to time spent) is not given. Clark and P. Bloom were able to capture perched Black-shouldered Kites in India easily using bal-chatri traps with mice. Bloom (pers. comm.) was able to capture only one White-tailed Kite in California using the same trap with mice out of more than 200 attempts. The one caught was undernourished and was captured outside of the breeding range of the kite.

Differences in hunting methods may be related to differences in prey selection. The White-tail is a rodent specialist, whereas the Black-shoulder, at least in some areas, takes a wider selection of prey including birds and lizards (Cramp and Simmons 1980, Palmer 1988:147). White-tails catch prey twice as quickly as do Black-shoulders from hovers (Mendelsohn and Jaksic 1989).

Black-shoulders often cock the tail up over their backs and then down (tail-bobbing of Palmer 1988:145); Tarboton (1978) reported tail-cocking during 14% of perch-hunting time, when intensely excited just before or after a strike. Although Steyn (1963) had previously linked tail-cocking to excitement, Mendelsohn and Jaksic (1989) suggested that it served to warn other birds away from the hunting area. Goriup (1981) reported tail-cocking during preening in Portugal. This behavior is seldom reported for White-tails (Brooks 1943). Despite many hours of observation, WSC has observed only one instance of tail-bobbing in American kites, by an adult female in California being harassed by her begging young.

Black-shouldered Kites often perch with their folded wings drooped below the tail whereas White-tailed Kites usually perch with the wing tips folded over the tail (Frontispiece), but both can hold their wings either way. A perched Australian Black-shouldered Kite is illustrated with the wings folded over the tail (Macdonald 1973), the usual posture for that species (R. Schodde, pers. comm.).

White-tailed Kites are somewhat communal and nest in fairly close proximity to one another and defend territories weakly. Watson (1940) reported some fighting by White-tails in the establishment of territories but noted that pairs often breed communally when prey are abundant. Peyton (1915) found two nests within 200 yards (184 m), and Pickwell (1930) reported three nests at points of a triangle measuring 320, 200, and 175 yards (294, 184, and 161 m). Hawbecker (1942:269) reported two pairs nesting within 400 yards (368 m) of one another, with only one aggressive encounter. Dixon et al. (1957) reported three nests within a radius of 500 feet (153 m), with two others in adjoining groves, and saw no territorial fighting. On the other hand, Black-shouldered Kites are strong in their territorial defense; Mendelsohn (1983) reported that South African birds defended their territories vigorously and persistently, where average territory size ranged from about 2.4 to about 4.5 km^2. However, Madden (1977) found two nests in South Africa that were approximately 200 m apart.

DISCUSSION

The inclusion of *leucurus* with *caeruleus* by the AOU was based mainly on Parkes (1958), and to a lesser extent on Husain (1959). Parkes (1958) made two points to support this merger. First, that one could arrange specimens of both forms progressively in an intergrading series and second, that these forms resemble each other more than do subspecies of some other raptors, specifically *Accipiter gentilis, A. striatus,* and *Falco peregrinus.*

We have found that *E. leucurus* can always be separated from *E. caeruleus* by the presence of black carpal patches and by a wing/tail ratio less

than 2.0; *caeruleus* lacks the black carpal patch and has a wing/tail ratio greater than 2.0.

Clark has observed in the field on different continents two or more races of 12 species of diurnal raptors, including *Accipiter gentilis* and *Falco peregrinus*. Although plumage can vary greatly between races of some of these species, none show the differences in behavior and overall proportions exhibited between *leucurus* and *caeruleus* as presented above.

We believe that the characters of the American birds are sufficiently distinctive to warrant recognition of the White-tailed Kite *E. leucurus* at the species level.

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COLOR PLATE

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